

544,124

(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property  
Organization  
International Bureau



(43) International Publication Date  
5 August 2004 (05.08.2004)

PCT

(10) International Publication Number  
**WO 2004/066121 A2**

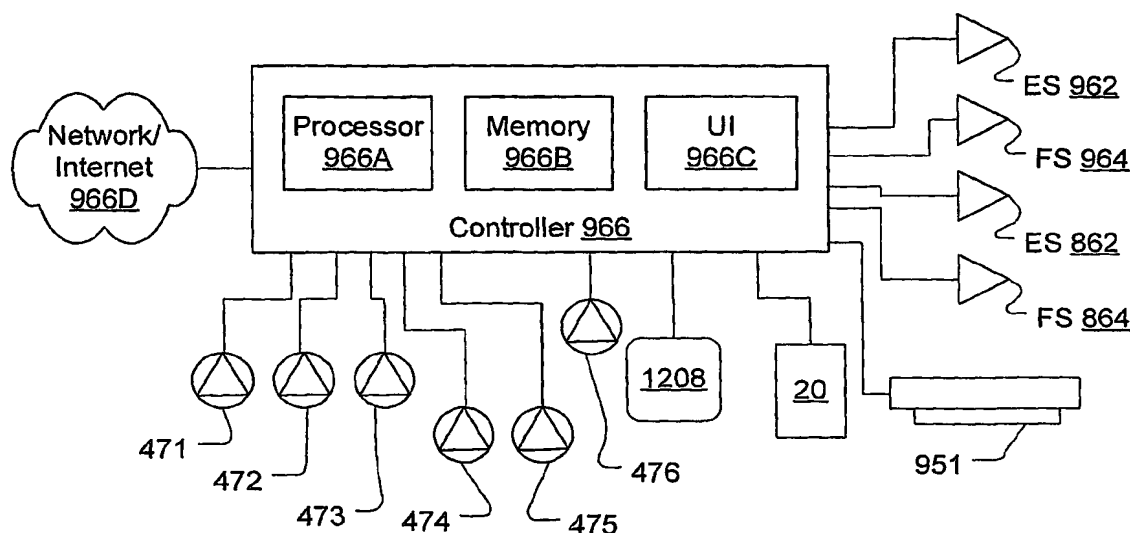
- (51) International Patent Classification<sup>7</sup>: **G06F**
- (21) International Application Number:  
PCT/US2004/000921
- (22) International Filing Date: 14 January 2004 (14.01.2004)
- (25) Filing Language: English
- (26) Publication Language: English
- (30) Priority Data:  
60/440,176 15 January 2003 (15.01.2003) US
- (71) Applicant (for all designated States except US):  
**NXSTAGE MEDICAL INC.** [US/US]; 439 South  
Union Street, 5th Floor, Lawrence, Massachusetts 01843  
(US).
- (72) Applicants and  
Inventors: **BRUGGER, James M.** [US/US]; 4 Savory  
Street, Newburyport, Massachusetts 01950 (US). **BUR-**  
**BANK, Jeffrey M.** [US/US]; 18 Sunrise Road, Boxford,  
Massachusetts 10920 (US).
- (74) Agent: **CATAN, Mark**; Proskauer Rose LLP, Patent De-  
partment, 1585 Broadway, New York, New York 10036  
(US).

- (81) Designated States (unless otherwise indicated, for every  
kind of national protection available): AE, AG, AL, AM,  
AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN,  
CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI,  
GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE,  
KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD,  
MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM, PG,  
PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM,  
TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM,  
ZW.
- (84) Designated States (unless otherwise indicated, for every  
kind of regional protection available): ARIPO (BW, GH,  
GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW),  
Eurasian (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), Euro-  
pean (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR,  
GB, GR, HU, IE, IT, LU, MC, NL, PT, RO, SE, SI, SK,  
TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW,  
ML, MR, NE, SN, TD, TG).

**Published:**  
— without international search report and to be republished  
upon receipt of that report

For two-letter codes and other abbreviations, refer to the "Guid-  
ance Notes on Codes and Abbreviations" appearing at the begin-  
ning of each regular issue of the PCT Gazette.

(54) Title: WASTE BALANCING FOR EXTRACORPOREAL BLOOD TREATMENT SYSTEMS



(57) Abstract: One or more waste balancing systems may be used in a fluid circulating system for medical use. The fluid circulating system may be part of a blood treatment system for a patient suffering renal failure. A waste balancing system may include a pressure element operable to maintain a constant fluid pressure created by the combined weight of waste removed from a patient and replacement fluid for providing to a patient. Multiple evaluation characteristics or control parameters may be evaluated or controlled for safety and accuracy. At least part of the waste balancing system may be incorporated into a disposable cartridge.

WO 2004/066121 A2